Time by Clock.				Astræa North of B.A.C. 1275.
	h	m	s	″
At	2	21	25·5	20·8
	2	43	56·5	24·7
At	2	32	41·0	
Clock slow		2	59·5	
At	2	35	40·5	

Green. Sid. Time, Astræa 22·8 North of B.A.C. 1275.

Apparent place of B.A.C. 1275 is $4^h\ 0^m\ 27^s{\cdot}5$, N.P.D. 77° 0′ 46″·7.

II. Tycho's Observations of the Comet of 1596, copied from the original Manuscripts of the Observatory of Uraniburg. By Professor Schumacher.

III. Elements of the Orbit of the Great Comet of 1844–5. By J. R. Hind, Esq.

These elements were computed without making any assumption respecting the conic section described, from the observations of 1845, January 10, February 7, and March 11; made by Mr. Caldecott, Dr. Peters, and Professor Challis respectively. The result is the following hyperbolic orbit.

Perihelion Passage, 1844, December 13·43188, Greenwich Mean Time.

Long. of Perihelion on Orbit ...	303°	58′	15″·12	Mean Equinox,
Long. of Ascending Node.....	114	59	7·27	1845·0.
Inclination	46	49	2·96	

$\psi = \sec^{-1} e = 24^\circ\ 47'\ 33''{\cdot}25 \qquad e = 1{\cdot}1015256.$

Log. perihelion distance 9·5065345.

Motion direct.

For the middle observation, the error in longitude is + 6″·25, and in latitude — 0″·84.

IV. Sextant Observations of the Distance of the Great Comet of 1844–5 from bright Stars, made at sea on board the brig Anonyma. By Captain C. R. D. Bethune, R.N.

1844, Dec. 29. Lat. 16° 10′ N.; Long. 73° 5′ E. The comet was first seen just before setting. Its nucleus was distinct, and equal to a star of the 4th or 5th magnitude; the estimated length of its tail was 5° or 6°, extending between α and γ *Gruis*.

Dec. 30. Lat. 14° 22′ N.; Long. 74° 18′ E. The comet was perceived nearly an hour after sunset, and the following observations were made with an 8-inch sextant; telescope inverting; index error + 7′ 10″.

Barometer 30^{in}·00; Thermometer 80° Fahr.

Chronometer Time.						
h	m	s				
1	52	13	Distance from	α Pisc. Aust.	28° 32′	0″
1	56	32	...	α Eridani ...	44 40	30
2	0	20	...	α Pisc. Aust.	26 31	30
2	4	59	..	α Eridani ...	44 38	30

Distance between the two stars observed, 39° 0′ 0″.

Again:

Chronometer Time. h m s			° ′ ″
2 7 29	Distance from	β Gruis	18 25 20
13 34	...	α Gruis	12 31 0

On Dec. 27 the chronometer was slow on Greenwich Mean Time $0^h\ 0^m\ 50^s$, and was losing 3^s daily.

Dec. 31. Index error of sextant + 7′ 10″. Very cloudy.

h m s			° ′ ″
2 11 51	Distance from	α Cygni (?)...	83 55 30
14 23	...	γ Gruis	8 59 0
15 54	...	α Pisc. Aust.	23 42 0
21 3	...	α Gruis	9 59 0

The preceding distances were taken without a telescope.

1845, Jan 1. Latitude, 11° 28′ N.; Longitude, 75° 50′ E. Very cloudy; the observations made with difficulty.

h m s			° ′
2 28 11	Distance from	α Pisc. Aust. ...	40 14
30 31	...	α Eridani.....	22 22

Jan. 2. The comet well seen; the nucleus equal to a star of the fourth magnitude.

Barometer, 30[in]; thermometer, 80°.

h m s			° ′ ″
1 44 20	Distance from	α Pisc. Aust.	21 6 0
48 37	...	...	4 40
50 40	...	...	4 40
53 32	...	α Eridani	38 57 50
55 58	...	...	58 50
57 36	...	...	59 0
59 32	...	...	55 20
2 1 15	...	α Pisc. Aust.	21 5 10
6 48	...	...	5 10
9 28	...	...	3 0
13 30	...	...	2 10
18 29	...	...	2 0
21 43	...	Jupiter.....	52 31 30
24 29	...	...	32 10

Jan. 3. Latitude, 9° 48′ N.; Longitude, 76° 13′ E. Cloudy at intervals.

h m s			° ′ ″	
2 27 28	Distance from	α Gruis	4 15 20	pretty
30 48	...	...	15 20	good.
42 58	...	γ Gruis	5 41 0	
44 59	...	α Gruis	4 15 0	

Jan. 4. Latitude, 8° 40′ N.; Longitude, 71° 35′ E. Very cloudy.

h m s			° ′ ″
1 58 1	Distance from	α Pisc. Aust.	17 55 20
2 0 38	...	...	58 0
2 56	...	α Gruis	2 54 40
4 57	...	...	54 0
10 6	...	...	55 30
7 0	...	β Gruis	7 24 30
8 33	...	...	25 0
12 30	...	α Eridani.....	35 17 0
14 25	...	...	18 0
15 55	...	...	16 10

Jan. 5. The night clear; the nucleus as bright as a star of the third magnitude.

Chronometer Time. h m s			° ′ ″
1 43 58	Distance from	α Eridani	33 39 20
46 5	...	...	38 0
47 31	...	...	38 10
49 30	...	α Pisc. Aust.	16 35 30
53 3	...	...	37 40
54 25	...	...	36 40
55 50	...	...	37 30
58 14	...	...	36 20
2 0 49	...	α Eridani.....	33 35 0
5 0	...	...	36 40
7 38	...	...	36 50
8 57	...	α Gruis	3 7 50

Jan. 6. Latitude, 6° 10′ N.; Longitude, 79° 50′ E. Cloudless night; the comet close to *δ Gruis*.

h m s			° ′ ″
1 55 59	Distance from	α Pisc. Aust.	15 28 0
57 28	...	...	27 0
58 55	...	...	27 20
2 1 16	...	α Eridani.... .	31 59 50
2 56	...	...	59 10
4 22	...	...	61 20
6 15	...	α Pisc. Aust.	15 26 50
8 8	...	...	27 40

Jan. 7. Latitude, 5° 54′ N.; Longitude, 80° 50′ E. Cloudy evening.

h m s			° ′ ″
1 46 40	Distance from	α Pisc. Aust.	14 38 20
48 42	...	...	36 10
51 11	...	α Eridani.....	30 26 30
52 29	...	...	26 30
53 42	...	α Pisc. Aust.	14 35 40
54 44	...	...	36 0

Jan. 9. Latitude, 5° 0′ N.; Longitude, 82° 45′ E. The comet not so bright as before.

h m s			° ′ ″
1 40 50	Distance from	α Pisc. Aust.	13 40 50
42 44	...	...	40 45
44 50	...	...	39 50
47 24	...	α Eridani.....	27 38 40
49 48	...	...	36 0
51 32	...	...	36 25
53 28	...	...	36 30
55 8	...	...	36 50
57 35	...	α Pisc. Aust.	13 39 10
59 6	...	...	40 20
2 0 21	...	...	39 40
3 16	...	β Ceti.....	32 48 0

Jan. 10. Latitude, 6° 3′ N.; Longitude, 83° 14′ E. Clear night.

h m s			° ′ ″
1 47 9	Distance from	α Pisc. Aust.	13 46 0
51 9	...	α Eridani	26 20 0
55 36	...	β Ceti	31 7 20
57 10	...	...	5 30
2 0 7	...	α Eridani	26 23 10
3 43	...	α Pisc. Aust.	13 45 40

Jan. 11. Latitude, 5° 8′ N.; Longitude, 85° 9′ E.

Chronometer Time. h m s			° ′ ″
1 39 38	Distance from	α Eridani	25 16 0
43 12	...	α Pisc. Aust.	14 1 20
47 20	...	β Ceti	29 26 20
50 9	...	...	22 20
52 11	...	...	24 20
54 48	...	α Pisc. Aust.	14 1 20
59 38	...	α Eridani	25 14 20

Jan. 16. Latitude, 3° 49′ N.; Longitude, 92° 27′ E. The comet not very distinct.

h m s			° ′ ″
1 44 28	Distance from	β Ceti	22 9 50
46 43	...	...	22 10 0
57 49	...	α Eridani	21 54 0
2 2 18	...	β Ceti	22 6 30
5 13	...	α Eridani	21 56 20
8 19	...	β Ceti	22 2 0
11 8	...	α Eridani	21 56 30
14 24	...	β Ceti	22 1 30

Jan. 17. Latitude, 4° 0′ N.; Longitude, 93° 10′ E. The distances doubtful.

h m s			° ′
1 16 16	Distance from	β Ceti	21 5 50
22 19	...	α Pisc. Aust.	20 3 30
25 48	...	α Eridani	21 40 20
29 32	...	α Pisc. Aust.	20 12 0*
33 6	...	β Ceti	21 6 10
37 26	...	α Pisc. Aust.	20 1 50
2 12 0	...	α Eridani	21 42 0

Jan. 18. Latitude, 4° 5′ N.; Longitude, 94° 0′ E. The night fine.

h m s			° ′ ″
0 56 16	Distance from	β Ceti	20 3 20
59 2	...	...	20 13 15
1 3 39	...	α Pisc. Aust.	21 37 40
18 34	...	β Ceti	20 13 0
21 22	...	α Pisc. Aust.	21 44 10
24 51	...	A′ Eridani	27 44 30

For the first observation of *β Ceti*, and for the first observation of *α Piscis Australis*, the index correction of sextant was + 7′ 10″; for the remaining observations the index correction was — 1′ 25″. The observations not very satisfactory.

Jan. 19. Latitude, 4° 50′ N.; Longitude, 94° 45′ E. Clear night; the observations very difficult.

h m s			° ′ ″
0 50 5	Distance from	β Ceti	19 20 20
53 47	...	...	21 0
1 0 2	...	A′ Eridani.....	26 24 50
4 44	...	...	25 10
8 19	...	β Ceti	19 19 40

Index correction — 1′ 25″.

* The author suspects that this distance should be 2′ 0″.

Jan. 26. Latitude, 4° 30′ N.; Longitude, 99° 5′ E. Fine clear night; the nucleus of comet more diffused.

Chronometer Time. h m s			° ′ ″
0 42 28	Distance from	β Ceti	17 33 30
44 45	...	...	34 30
48 38	...	α Ceti	41 41 50
51 39	...	...	40 50
54 18	...	β Ceti	17 35 50
57 45	...	Aldebaran	65 16 10
1 0 1	...	...	16 20
3 34	...	...	15 50
7 46	...	β Ceti	17 34 10
12 3	...	...	33 50

Index correction — 1′ 25″.

Jan. 27. Latitude, 3° 37′ N.; Longitude, 100° 30′ E. Clear night; the distances satisfactory.

h m s			° ′ ″
0 43 10	Distance from	α Ceti	40 20 30
44 30	...	...	19 40
46 16	...	...	19 20
48 46	...	β Ceti	17 50 50
50 11	...	...	51 20
51 48	...	...	50 35
54 10	...	α Ceti	40 17 40
56 34	...	α Arietis	54 47 20
58 15	...	...	45 50
1 0 50	...	Aldebaran	63 46 20
2 46	...	...	47 0
5 2	...	α Ceti	40 18 45
		α Arietis.....	54 47 40

The index correction — 1′ 25″.

Jan. 28. Latitude, 3° 3′ N.; Longitude, 101° 0′. Fine night, but not so clear as the preceding.

h m s			° ′ ″
0 31 50	Distance from	Aldebaran...	62 21 30
34 8	...	...	20 40
36 50	...	α Ceti	39 1 20
38 45	...	...	1 10
40 57	...	α Arietis ...	53 51 50
44 20	...	...	50 20
46 54	...	β Ceti	18 15 0
48 54	...	...	14 20
51 49	...	α Arietis ...	53 49 50
54 50	...	α Ceti	38 58 10
58 9	...	Aldebaran...	62 22 30*

Index correction — 1′ 25″.

Where the index correction is not stated, it is understood to be +7′ 10″. The barometer reading may be assumed to be 30^{in}, and the thermometer reading 80° throughout.

V. Estimated Positions of Biela's Comet on Dec. 19, 1845, as seen with Mr. Lassell's Newtonian Telescope. By the Rev. W. R. Dawes.

* Probably erroneous.